



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: **Leach**

Serial No.: **09/591,258**

Filing Date: **June 9, 2000**

For: **Method and System for Monitoring
and Transmitting Utility Status via
Universal Communications Interface**

Confirmation No.: **2469**

Art Unit: **2181**

Examiner: **Lee, C.**

APPLICANT'S APPEAL BRIEF

Dear Sirs:

Pursuant to 37 C.F.R. §1.192 and M.P.E.P. §1206, the Applicant submits this complete new Appeal Brief, in triplicate, to the Board of Patent Appeals and Interferences. This brief is in response to the Notice of Non-Compliant Appeal Brief mailed on November 24, 2004. This new Appeal Brief is transmitted by Express Mail on December 8, 2004.

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" (EL 973736895 US) service under 37 CFR 1.10 on the date indicated above and is addressed to: Mail Stop Appeal Brief - Patents, Commissioner for Patents, Alexandria, VA 22313-1450 this 8th day of December 2004.


Beverly Hopkins

I. REAL PARTY IN INTEREST

This application is assigned to AMRON Technologies, Inc. An assignment from the inventor to Leach Industries, Inc. was recorded with the Patent Office at reel 011230 and frame 0347 on October 31, 2000. An assignment from Leach Industries, Inc. to Wilmeth Enterprises, LLC, was recorded with the Patent Office at reel 014699 and frame 0296 on November 18, 2003. A subsequent assignment from Wilmeth Enterprises, LLC to AMRON Technologies, Inc. was recorded with the Patent Office at reel 014699 and frame 0300 on November 18, 2003.

II. RELATED APPEALS AND INTERFERENCES

The Applicant is not aware of any related appeals or interferences

III. STATUS OF CLAIMS

All pending claims, Claims 12-21, stand rejected. The claims are attached hereto in Appendix A. All claims are appealed herein.

IV. STATUS OF AMENDMENTS

No amendments were filed after the rejection in the Final Office Action of May 13, 2004.

V. SUMMARY OF THE INVENTION

The present invention is directed towards an Automated Meter Reader (AMR) system for collecting and transmitting utility meter status information to a utility or other end user. Typically, status information includes data such as the current meter reading, or whether there is a power outage or low voltage. Whereas prior art AMR systems are functionally limited in their communication methods and options, the AMR system of the present invention uses a universal communications interface adaptable to accept many forms of communication mediums such as radio frequency waves, telephone lines, cable lines, fiber optic lines, satellite links, and power lines, which require data to be transmitted in a particular format.

The communication flexibility provided by the present invention allows AMR providers to select among multiple communication methods. This permits the providers to reduce costs by having a single adaptable system, while also allowing providers to negotiate with

multiple communication providers, such as cellular providers, thereby driving down the cost of meter monitoring. As stated a page 2, lines 1 - 12 of the Specification:

A significant drawback of prior art AMR devices is that they are functionally limited in their communications options and are thus not generally adaptable to evolving communications technology. AMR devices are typically constructed with hardware and/or software components for transmitting and receiving AMR data over a single communications medium. Some prior art AMR devices may be equipped with components for transmitting and receiving AMR data over a finite number of communications media. However, as communications technology advances and new and different communications mediums are selected for the transmission of AMR data, incompatible AMR devices must be replaced at great expense to the utility companies.

The AMR system of the present invention is preferably incorporated into an AMR but may be separate from a local or remote meter. As shown in FIG. 1, the AMR system 100 may receive input data, such as voltage and current levels, from a variety of monitored meters in a variety of formats (Application, Page 5, lines 27-29). After a specific period of time, the AMR system transmits the input data to a receiving device via a connected output device (Application, Page 6, lines 1-4). The AMR system may be programmed to transmit on one or more connected output devices in one or more signal formats. For instance, a single AMR system 100 may transmit a first signal across a telephone network 102 to a pager 140 notifying a technician of a power outage at a monitored electric meter 110, while simultaneously sending an R/F transmission 101 to a billing system 170 to notify the billing system to temporarily suspend billing until the meter is repaired.

The AMR system 100 is described in detail with reference to FIG. 2 of the application. Briefly, voltage and current signals are received via a voltage input interface 202 and a current input interface 204, respectively. These interfaces 202, 204 are coupled to an analog-to-digital (A/D) conversion device 206 which converts the voltage and current signal to digital form. The digital signals are input into a processor 208, which measures and processes utility usage readings. The processor 208 communicates with a universal communications interface 228, which allows the AMR system 100 to communicate via any medium, such as R/F, telephone, cable, fiber optics, satellite, power line carriers, etc. To effect this communication, the universal communications interface 228 sends and receives data to and from communication device(s) via ports 230, 232. According to one aspect of the invention, plug-and-play software

may be used to enable the universal communications interface 228 to recognize a communications device that is plugged into a slot 230, 232.

Because the universal communications interface 228 is configurable for communicating with a plurality of different types of communication devices, such as modems, a utility meter may use interchangeable communication devices, such as CDMA, IDN, GPRS, and satellite modems, without any changes to the utility meter. This provides owners of the utility meters leverage in dealing with service providers providing communication pathways between the meters and a central facility. Accordingly, an advantage of the present invention, as defined in independent claim 12, is its ability to adapt to new and changing communication mediums by interchangeably accepting different types of communication devices. The AMR system of the present invention therefore allows advances in communications technology without requiring the costly replacement of an AMR or AMR device.

VI. ISSUES

1. Whether Claims 12 and 13 are unpatentable under 35 U.S.C. §103(a) as being obvious in light of U.S. Patent No. 5,031,209 to Thornborough et al. ("*Thornborough*") in view of U.S. Patent No. 6,199,133 to Schnell ("*Schnell*") and further in view of U.S. Patent No 6,212,550 to Segur ("*Segur*")?

2. Whether Claims 14, 17 and 18 are unpatentable under 35 U.S.C. §103(a) as being obvious in light of *Thornborough* in view of *Schnell* and *Segur* and further in view of U.S. Patent No. 5,994,892 to Turino et al. ("*Turino*")?

3. Whether Claims 15, 16 and 19 are unpatentable under 35 U.S.C. §103(a) as being obvious in light of *Thornborough* in view of *Schnell* and *Segur* and further in view of U.S. Patent No. 6,118,269 to Davis ("*Davis*")?

4. Whether Claims 20 and 21 are unpatentable under 35 U.S.C. §103(a) as being obvious in light of *Thornborough* in view of *Schnell* and *Segur* and further in view of U.S. Patent No. 6,360,177 to Curt et al. ("*Curt*")?

VII. GROUPING OF CLAIMS

For purposes of this appeal, the Applicant is asserting the separate patentability of the following groups of claims:

Issue 1: 35 U.S.C. §103, Rejection in light of *Thornborough* in view of *Schnell* and further in view of *Segur*: Claims 12 and 13.

Issue 2: 35 U.S.C. §103, Rejection in light of *Thornborough* in view of *Schnell* and *Segur*, and further in view of *Turino*: Claims 14, 17, and 18.

Issue 3: 35 U.S.C. §103, Rejection in light of *Thornborough* in view of *Schnell* and *Segur*, and further in view of *Davis*: Claims 15, 16, and 19.

Issue 4: 35 U.S.C. §103, Rejection in light of *Thornborough* in view of *Schnell* and *Segur*, and further in view of *Curt*: Claims 20 and 21.

VIII. ARGUMENT

A. Prosecution History

1. Original Application and First Office Action dated August 13, 2002

The present application was originally filed with 11 claims, including independent Claims 1, 6, and 11. In the first Office Action mailed on August 13, 2002, the Examiner rejected Claims 1, 3 and 5 under 35 U.S.C. §102(b) in light of *Thornborough*. The Examiner also rejected Claims 2, 4 and 6-8 under 35 U.S.C. §103(a) as unpatentable over *Thornborough* in view of numerous secondary references, including U.S. Patent No. 5,923,269, to Shuey et al. ("*Shuey*") (Claim 2), U.S. Patent No. 6,304,231, to Reed et al. ("*Reed*") (Claim 4) and U.S. Patent No. 5,875,234, to Clayton et al. ("*Clayton*") (Claims 6-8). Additionally, Claims 9-11 were rejected under 35 U.S.C. §103(a) as unpatentable over *Thornborough* in view of *Clayton*, and further in view of *Turino*.

2. First Amendment Response of February 13, 2003

In an Amendment Response filed on February 13, 2003, the Applicant canceled Claims 1-11 and added new Claims 12-21. Claim 12 as represented in the Amendment Response is reproduced below:

12. A system for monitoring and transmitting utility status via a universal communications interface, comprising:

an input interface operative to receive a utility status signal from a utility meter;

a processor functionally coupled to the input interface for receiving the utility status signal from the input interface and operative to generate a status message based on the utility status signal;

a universal communications interface functionally coupled to the processor and configurable for communicating with a plurality of different types of communication devices, each different type of communication device operative to communicate with a receiving device via one of a plurality of different communication mediums;

a slot functionally coupled to the universal communications interface and configured to interchangeably connect one of the plurality of different types of communication devices;

wherein the processor communicates with the universal communications interface to determine which one of the plurality of different types of communication devices is connected to the slot; and

wherein the processor formats the status message into a format compatible with the connected communication device and transmits the formatted status message to the universal communications interface for transmission to the connected communications device.

In the Amendment response, the Applicant noted that the outstanding rejections were moot in view of the cancellation of Claims 1-11, and argued that new claims 12-21 were patentable over *Thornborough*, *Shuey*, *Reed*, *Clayton* and *Turino*. More specifically, Applicant stated that, with the exception of *Clayton*, which fails to describe an AMR system, the prior art references cited by the Examiner merely disclose AMR systems that are functionally limited in their communication options. Therefore, Applicant asserted that none of the references describe, teach or suggest all of the elements of independent Claim 12, which includes a universal communications interface that may communicate with a plurality of different types of communication devices operative to communicate with a receiving device via one of a plurality of different communication mediums.

More specifically, in regard to *Thornborough*, Applicant maintained that *Thornborough* discloses an AMR system configured for communication only over a single communication medium, i.e., a telephone network. The Applicant further stated that although the device in *Thornborough* is able to transmit signals in accordance with BELL and CCITT standards, all transmission signals are transmitted via a TX Out line 58 connected to a telephone interface circuit 42. Applicant distinguished *Shuey* and *Turino* on similar grounds; namely, that each disclose a utility meter specifically configures for communications via certain mediums and are unable to adapt to new and different mediums. Applicant also distinguished *Reed* as failing

to teach or suggest an AMR system capable of communicating via multiple communications media, and *Clayton* as teaching telecommunication systems limited to telephony networks though such systems were irrelevant to AMR systems.

3. Final Office Action dated March 31, 2003

A Final Office Action was mailed to Applicant on March 31, 2003. In the Final Office Action the Examiner rejected Claim 12 under 35 U.S.C. 103(a) in light of *Thornborough* in view of newly cited references *Schnell* and *Segur*. Additionally, the Examiner rejected each of dependent claims 13-21 by combining *Thornborough* in view of *Schnell* and *Segur*, as applied to Claim 12, in view of various fourth references: *Cosentino* (Claim 13), *Turino* (Claims 14, 17, and 18), *Davis* (Claims 15, 16, and 19), and *Curt* (Claims 20 and 21). The Applicant's statements with respect to the claims were considered moot in view of the new grounds of rejection. Because these rejections are the current rejections that are the issue of this appeal, each is discussed in detail below.

With regard to independent Claim 12, the Examiner alleged that *Thornborough* discloses a system for monitoring and transmitting utility status via a universal communications interface (citing the FSK BELL transmitter 53, FSK CCITT transmitter 54, buffer 62, and MUX 55 of FIG. 3 as combined) configurable to communicate via a communication medium (citing a telephone line). (Final Office Action, Pages 3-4.) The Examiner admitted that *Thornborough* failed to disclose or teach many elements of independent Claim 12, including:

- a universal communications interface for communicating with different types of communication devices;
- a slot functionally coupled to the universal communication interface to interchangeably connect to a plurality of different types of communication devices; and
- a processor for formatting a status message into a format compatible with a connected communications device.

(Final Office Action, Pages 3-4). Because the Examiner found that *Thornborough* did not teach these features, the Examiner used the combination of *Schnell* and *Segur* supply the remaining elements of Claim 12. (Final Office Action, Page 4).

According to the Examiner, *Schnell* discloses a universal communications interface (citing the entire network system in FIG. 2A) that is configurable to communicate with

a plurality of different types of devices (citing col. 5, lines 18-49; including Ethernet, Token Ring, CDDI, ATM, etc.) via different communication mediums. (Final Office Action, Page 4). After stating the claim elements purportedly provided by *Schnell*, the Examiner provided a purported statement of motivation to combine *Schnell* with *Thornborough*. The Examiner's complete statement of motivation to combine *Schnell* and *Thornborough* is reproduced below:

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said universal communications interface (i.e., network system), as disclosed by *Schnell*, in said system, as disclosed by *Thornborough*, so as to communicate to multiple network drives (See *Schnell*, Fig. 1) with the advantage of enabling management of a plurality of network devices of said universal communications interface (i.e., network system). (Emphasis added.)

The Office Action stated that the combination of *Thornborough* and *Schnell* failed to teach all of the elements of Claim 12, including:

- a processor for formatting the status message into a format compatible with the connected communication device and transmits the formatted status message to the universal communications interface for transmission to the connected communications device. (Final Office Action, Page 5.)

To fill this void the Examiner relied on *Segur*.

More specifically, the Examiner stated that *Segur* discloses a multi-format communications client-server, wherein a processor (referring to controller and processor in Fig. 2) formats a status message into a format compatible (citing block 178 in Fig. 6 and col. 2, lines 47-50) with a connected communication device (referencing a subscriber unit generating the message retrieval query) and transmits the formatted status message to a universal communications interface (citing the communications interfaces 66 of Fig. 2) for transmission to a connected communications device (stating that "wherein in fact that once the conversion is complete, the messages are transmitted to the subscriber unit implies that the processor ... transmits the formatted status message to the universal communications interface for transmission to the connected communications device.") (Final Office Action, Pages 5-6). The Examiner's complete statement of motivation for combining *Segur* with the purported elements taught by *Thornborough*, as modified by *Schnell* is reproduced below:

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said features of said controller and processor, as disclosed by *Segur*, in

said processor, as disclosed by *Thornborough*, as modified by *Schnell*, for the advantage of providing a message formatting (i.e., format conversion feature) for said universal interfacing (i.e., multi-format communications), such that said processor (i.e., controller and processor) formats (i.e., converts) said status message (i.e., message) in a compatible format with a data format of said connected communication device (i.e., subscriber unit), and transmits it to said connected communication device (i.e., subscriber unit).

Having rejected independent Claim 12 on the combination of *Thornborough* and *Schnell* and *Segur*, the Examiner turned to the dependent claims. As noted above, each of the dependent claims were rejected based on the combination of *Thornborough*, *Schnell* and *Segur* in combination with additional fourth references. Each of these rejections are at issue here, and are considered next.

In regard to Claim 13, the Examiner found that *Cosentino* discloses a microprocessing system, wherein various communication mediums may be utilized such as a group including radio frequency waves, infrared waves, satellite links, and power lines. Based on this assertion the Examiner found that Claim 13 was obvious over *Thornborough* in view of *Schnell* and *Segur* and *Cosentino*. The Examiner's statement concerning motivation to combine *Cosentino* with *Thornborough* and *Schnell* and *Segur* reads: "Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said group of communication mediums, as disclosed by *Cosentino*, in said group of communication mediums, as disclosed by *Thornborough*, as modified by *Schnell* and *Segur*, for the advantage of providing the capability of transmitting said status message without the need for any special wiring." (Final Office Action, Page 7) (Emphasis Added).

In regard to Claims 14, 17 and 18, the Examiner found that *Turino* discloses a direct read circuitry in an automatic utility meter wherein an input signal comprises an analog wave form, and wherein an input interface comprises an analog-to-digital converter operative to convert said analog wave form into a digital signal representing a utility status. In light of this purpose the Examiner found that Claims 14, 17 and 18 were obvious over *Thornborough* in view of *Schnell* and *Segur* and *Turino*. The Examiner's statement concerning motivation to combine *Turino* with *Thornborough* and *Schnell* and *Segur* reads: "Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said direct read circuitry, as disclosed by *Turino*, in said system, as disclosed by *Thornborough*, as modified

by *Schnell* and *Segur*, for the advantage of providing a capability of performing power usage calculation.” (Final Office Action, Page 7)(Emphasis Added).

In regard to Claims 15, 16 and 19, the Examiner found that *Davis* discloses an electric meter tamper detection circuit (citing Fig. 7), wherein an input signal is received from: a connect/disconnect monitor of a utility meter (citing Meter in Fig. 7 and col. 12, lines 10-21), or a tamper detection monitor of a utility meter (citing col. 2, lines 42-61), and an outage notification monitor of a utility meter (citing col. 13, lines 41-44). The Examiner’s statement concerning motivation to combine *Davis* with *Thornborough* and *Schnell* and *Segur* reads: “Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said electric meter tamper detection circuit, as disclosed by *Davis*, in said system, as disclosed by *Thornborough*, as modified by *Schnell* and *Segur*, for the advantage of providing said system capable of detecting electrical meter tampering which will eliminate false tamper alert, and of notifying a remote headend if and when an electrical meter has been removed.” (Final Office Action, Page 9) (Emphasis Added).

In regard to Claim 20, the Examiner found that *Curt* teaches a monitoring unit (citing Fig. 4) in a voltage scanning, measurement, storage and reporting device, where computer-readable instructions (referencing col. 6, lines 6-16 and col. 24, lines 28-35) cause a processor (citing the digital microprocessor 435 of Fig. 4) to determine whether a utility status signal (citing voltage waveform information) exceeds a threshold value (citing col. 17, line 65 through col. 19, line 5), and if so, to generate a status message (citing col. 13, lines 20+) (Final Office Action, Page 9). The Examiner’s statement concerning motivation to combine *Curt* with *Thornborough* and *Schnell* and *Segur* reads: “Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said monitoring unit, as disclosed by *Curt*, in said system, as disclosed by *Thornborough*, as modified by *Schnell* and *Segur*, for the advantage of monitoring said utility status signal ... provided through said utility meter ... and analyzing the monitored waveform.” (Final Office Action, Page 10) (Emphasis Added).

In regard to Claim 21, the Examiner further found that *Thornborough* in combination with *Schnell* and *Segur* and *Curt* teaches the invention of Claim 20, though no separate motivation to combine the two references was cited by the examiner.

4. Request for Continued Examination and Amendment Response of September 30, 2003

In response to the Final Office Action, Applicant filed a Request for Continued Examination (RCE) and an Amendment Response to the Final Office Action on September 30, 2003. In the Amendment Response, the Applicant amended dependent Claims 14-19 to correct an antecedent basis rejection by changing "input signal" to "utility status signal". A minor amendment was made to dependent Claim 13, eliminating "infrared waves" from a markush group identifying types of "communication mediums". However, no amendments were made to independent Claim 12.

In the Amendment Response the Applicant argued there was no motivation to combine the *Thornborough* in view of *Schnell* and further in view of *Segur*, and that there was no objective suggestion that such a combination would be preferable, or even successful. Applicant noted that the only statements concerning motivation were broad and conclusory and unsupported by clear evidence. As such, Applicant stated that the motivation to combine the references was insufficient and based on hindsight reasoning. Furthermore, the Applicant asserted that the Examiner's stance regarding motivation was inaccurate given the teachings of the cited references.

To make clear the lack of motivation to combine the references, Applicant stressed that there is no suggestion in *Thornborough* that anything other than a telephone communication should (or could) be used to transmit data, including a communication device permitting communication with multiple devices requiring a variety of data formats and a variety of communication connections. Applicant also argued that there was no motivation to combine *Schnell* and *Segur* to provide the claim elements lacking by *Thornborough*. Applicant admitted that *Schnell* discloses a management communication bus that permits networking devices, such as computers, to communicate. However, Applicant stated that formatting a message into a format compatible with a connected communication device, as required by independent claim 12, was inconsistent with the purpose of *Schnell* because *Schnell* seeks to avoid formatting messages altogether, which is required by independent Claim 12. Furthermore, Applicant stressed that there is no teaching or suggestion that the communication bus in *Schell* should or could be used in the electromechanical meter reader of *Thornborough*. In addition to these failures in motivation to combine *Thornborough* and *Schnell*, the Applicant further argued that the multi-

format communications client-server of *Segur* failed to provide any motivation for combining any of the three cited references.

5. Non-Final Office Action dated November 13, 2003

In response to the above-described Amendment Response and RCE, the Examiner issued a non-final Office Action dated November 13, 2003. The Examiner repeated the rejection of the outstanding claims, rejecting each claim under the exact same basis as in the previous Final Office Action mailed on March 31, 2003, but for now combining the rejection of Claim 13 with Claim 12. In the Office Action the Examiner disagreed with the Applicant's arguments that there was no motivation to combine *Thornborough*, *Schnell* and *Segur*. However, the Examiner did not provide any further motivation or explanation for combining the references.

In response to the Applicant's arguments concerning the lack of motivation to combine the references, the Examiner simply provided Form Paragraph 7.37.04 providing a response to a purported unpersuasive applicant argument for no suggestion to combine references. Note however, where Form Paragraph 7.37.04 requires the Examiner to provide an explanation where the motivation for the rejection is found, either in the references, or in the knowledge generally available to one of ordinary skill in the art (MPEP 707(f), Form Paragraph 7.37.04, note [1]), the Examiner simply states that "In this case, Examiner has clearly pointed out rationale for appropriate combination of the references." (RCE Non-Final Office Action, Page 9)(Emphasis added). No further rationale was provided by Examiner. The Examiner also provided Form Paragraph 7.37.03 relating to hindsight reasoning, which states that any judgment on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, and is proper so long as it does not include knowledge gleaned only from the applicant's disclosure. (RCE Non-Final Office Action, Pages 9-10).

6. Examiner Interview on March 9, 2004

In response to the RCE Non-Final Office Action of November 13, 2003, Applicant requested an Examiner interview to discuss the outstanding 35 U.S.C. §103 rejections. The interview occurred on March 9, 2004 at the USPTO. During the interview the Applicant (i.e., the inventor-Applicant and the Applicant's attorney) specifically addressed the teachings of the *Thornborough* and *Schnell* references (See generally, Applicant's Summary of Interview as described in Amendment Response of March 16, 2003, Pages 4-9). Applicant asserted that the

outstanding rejection provided no motivation to combine the references other than the outstanding rejection's conclusory assertion that the references could and would be combined to read on the claims of the present application.

Referring first to *Thornborough*, Applicant pointed out that the meter disclosed by *Thornborough* teaches a meter providing a singular, one way communication from the meter to a host, also referred to as outbound communication. Applicant further described the meter of *Thornborough* as an electromechanical meter having an interface operable to count the rotation of a mechanical wheel. Applicant also noted that the meter described by *Thornborough* is no longer commercially due to its operation as an electromechanical meter as opposed to a fully digital meter having no moving parts. Applicant distinguished the claimed invention from *Thornborough*. Referring specifically to the language of independent Claim 12, Applicant stressed that *Thornborough* fails to disclose a meter having a universal communications interface because *Thornborough* communicates via a single port using a dedicated telephone transmission line. As such, Applicant argued that the communication interface of *Thornborough* cannot communicate with a plurality of different types of communication devices, as required by the universal communications interface recited in Claim 12.

Next, turning to *Schnell*, Applicant described the invention disclosed by *Schnell* as a bus utilized in a PC environment, where the bus plugs into multiple devices that may be in communication with each other. The Applicant also described the bus as including multiple ports to communicate with each of the computing devices, and noted that the bus also uses a master/slave architecture to enable communication. Additionally, Applicant described that the bus resides remote and external to the multitude of devices that communicate via the bus.

After discussing the disclosure of the two references the Applicant maintained that the outstanding rejection was improper because there was no motivation to combine the *Schnell* and *Thornborough* references in the §103 rejection. Applicant asserted that there is no objective suggestion that such a combination would be preferable or successful. Applicant also asserted that one of ordinary skill in the art of digital meters would not have considered *Schnell* as a reference teaching technology useful in modifying digital meters because *Schnell* was non-analogous art to *Thornborough*.

More specifically, Applicant argued that utility meter manufacturers would not have relied on *Schnell* to provide a universal communications interface as asserted by the Examiner due to the extreme differences between *Thornborough* and *Schnell* which result from

the limitations of electromechanical utility meters and their dissimilarity from master/slave computer networks. Applicant stressed that *Thornborough* discloses an electromechanical meter that is purpose built for communicating meter information via a single communication line and protocol using very low power levels. As noted by Applicant, *Thornborough* lacks user interfaces, drivers, multiple ports, inputs/outputs, digital input, and a conventional operating system. Although Applicant admitted that meters such as that described by *Thornborough* include a broadly defined "processor", Applicant stressed that the similarities end there.

As described during the interview, the performance and limitations provided by the hardware and software of an electromechanical meter do not support the features provided by the master/slave networking system of *Schnell*. Such limitations would have precluded one of ordinary skill in the art the motivation to combine the *Schnell* and *Thornborough* references. In fact, the inventor stressed that given his extensive knowledge and fifteen-plus years of experience in the utility meter industry, he would not have considered the multi-port communications bus recited in the *Schnell* reference to produce a solution for a utility meter having a single port, as there is no reason why one would look towards a computer networking solution describing a multi-port bus to enable master slave communications between multiple networked devices to enhance a dedicated electromechanical utility meter having a single port and sparse resources for any functions other than meter data collection. (Amendment Response of March 16, 2003, Pages 6-7). For many of the same reasons, Applicant stated that *Schnell* was nonanalogous to *Thornborough*. Applicant offered to submit an affidavit stating the same, but Examiner remained undeterred in supporting the combination of references. Applicant also offered to produce evidence of commercial success to further support the argument of non-obviousness of the claimed system, but the Examiner stated it was not necessary.

To support the combination of *Thornborough* and *Schnell*, the Examiner pointed only to the fact that both relate to "digital computer technology". (Examiner's Interview Summary, Paper No. 15; Amendment Response of March 16, 2003, Pages 6-7). To further support the references' combinability and the motivation to combine the references, the Examiner stated that a computer could implement the function of the present invention and could be used to test the present invention. Applicant ardently disagreed with the Examiner's logic and conclusions, stating that the Examiner's argument illustrated the hindsight reasoning employed in the outstanding §103 rejections. Applicant stated that the use of a computer to test or implement the present invention has no bearing on the motivation to combine the references.

(Amendment Response of March 16, 2003, Pages 6-7). Applicant stated that simply because a computer can implement an inventive concept (taking knowledge of the concept after the fact) doesn't necessarily result in the computer being appropriate basis for, or motivation for, a 103 rejection to a claimed concept. Otherwise any function that may be implemented by a computer would result in the computer being a proper reference to reject a novel inventive concept without evidence of motivation or a teaching to combine the references. Applicant asserted that the claimed system employs a universal communications interface local to a meter; taking the Applicant's invention and reproducing its function using a computer has no relevance to the §103 rejection, which must provide a motivation to combine the *Thornborough* and *Schnell* references to illustrate that the Applicant's claimed invention is obvious. Applicants also stated that the Examiner's failure to provide a motivation to combine *Thornborough* and *Schnell* permeated throughout the entire Office Action, including the rejections of all of the dependent claims.

Because most of the interview's scheduled time was directed to the teachings of, and lack of motivation to combine, the *Thornborough* and *Schnell* references, Applicants did not have time to discuss the lack of motivation to combine *Thornborough* and *Schnell* with *Segur* and/or fourth references. However, Applicant maintained that deficiencies for motivation to combine permeated throughout the claims. Nevertheless, Applicants did briefly discuss a proposed claim amendment with the Examiner in an effort to further prosecution and further distinguish the claims in a manner the Examiner found effective. In this regard, Applicants suggested amending Claim 12 to recite that the universal communications interface is local to the utility meter. Notwithstanding the outstanding disagreement regarding the motivation to combine *Thornborough* and *Schnell*, Applicant stated that *Schnell* does not include a universal communications bus local to a utility meter. Applicants stated that as distinguished from the present invention, the bus in *Schnell* is positioned external to the devices with which it is in communication. This proposed amendment also further recognized the inherent differences between utility meters and the system provided by *Schnell*. The Examiner appeared receptive to the amendment, and stated that the amendment, if submitted, would at least require a further search on the claimed invention. At the close of the interview the Applicant was handed

7. Amendment Response of March 16, 2004

The Amendment response submitted by Applicant included the claim amendment discussed with the Examiner during the Examiner interview. Independent claim 12 was amended as follows:

Claim 12 (currently amended): A system for monitoring and transmitting utility status via a universal communications interface, comprising:

an input interface operative to receive a utility status signal from a utility meter;

a processor functionally coupled to the input interface for receiving the utility status signal from the input interface and operative to generate a status message based on the utility status signal;

a universal communications interface, local to the utility meter, functionally coupled to the processor and configurable for communicating with a plurality of different types of communication devices, each different type of communication device operative to communicate with a receiving device via one of a plurality of different communication mediums;

a slot functionally coupled to the universal communications interface and configured to interchangeably connect one of the plurality of different types of communication devices;

wherein the processor communicates with the universal communications interface to determine which one of the plurality of different types of communication devices is connected to the slot; and

wherein the processor formats the status message into a format compatible with the connected communication device and transmits the formatted status message to the universal communications interface for transmission to the connected communications device.

The Amendment response also included a summary of the Examiner Interview, and arguments supporting each of the Applicant's assertions made in the interview – namely, that there was no motivation to combine any of the references, including *Thornborough* and *Schnell*. (Amendment Response of March 16, 2004, Pages 4-8). Applicants also stressed that the claim amendment further emphasized the differences between the claimed invention and the prior art for the reasons discussed in the Examiner Interview. (Amendment Response of March 16, 2004, page 8). Because the arguments presented in the amendment were consistent with those described above in regard to the Examiner Interview, they are not described again herein.

8. Final Office Action dated May 5, 2004

Applicant received a Final Office Action dated May 5, 2004. In the Office Action the Examiner repeated each of the previous rejections, rejecting independent Claim 12 and dependent Claim 13 under 35 U.S.C. 103(a) as being unpatentable over *Thornborough* in view of *Schnell* and *Segur*, and rejecting each of dependent claims 14-21, based on the combination of *Thornborough* and *Schnell* and *Segur* and various fourth references.

The Examiner's rejections were identical to that of the first Final Office Action of March 31, 2003 and the RCE Non-Final Office Action of November 13, 2003. In fact, the Examiner's complete statements in support of motivation to combine *Schnell* with *Thornborough*, and *Segur* with *Thornborough* and *Schnell*, were exactly the same as those made in the previous office actions:

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said universal communications interface (i.e., network system), as disclosed by *Schnell*, in said system, as disclosed by *Thornborough*, so as to communicate to multiple network devices (See *Schnell*, Fig. 1) with the advantage of enabling management of a plurality of network devices of said universal communications interface (i.e., network system).

[and]

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said features of said controller and processor, as disclosed by *Segur*, in said processor, as disclosed by *Thornborough*, as modified by *Schnell*, for the advantage of providing a message formatting (i.e., format conversion feature) for said universal interfacing (i.e., multi-format communications), such that said processor (i.e., controller and processor) formats (i.e., converts) said status message (i.e., message) in a compatible format with a data format of said connected communication device (i.e., subscriber unit), and transmits it to said connected communication device (i.e., subscriber unit).

Like the previous office actions, the Examiner provided no further support or explanation for the motivation to combine the references, stating simply that "The Examiner has clearly pointed out rationale for appropriate combination of the references *Thornborough* and *Schnell*", citing the statements reproduced above. (See RCE Final Office Action, page 10).

In regard to Applicant's statement that *Thornborough* and *Schnell* are non-analogous art, the Examiner stated that "*Schnell* produces a solution for a utility meter why one would look towards a computer networking [sic] to enable various protocol communications between multiple networked devices (i.e., metering devices) to enhance a dedicated utility meter." (RCE Final Office Action, Page 12).

Examiner further stated that the inventor's statements, that no one with his industry experience would have combined the references to produce the present invention, were not evidence. Applicant understands that these statements were persuasive only. However, as discussed above with respect to the Examiner's Interview, Applicant suggested during the interview of an affidavit of the inventor, or of secondary considerations, but the Examiner's admitted an unwillingness to change his position on the §103 rejection even in view of such a submission.

This Appeal followed.

B. The Rejections are in Error:

Issue 1: The Rejection of Claims 12 and 13 under 35 U.S.C. §103 is in Error

The rejection of Claims 12 and 13 under 35 U.S.C. §103(a) as unpatentable over *Thornborough* in view of *Schnell*, and further in view of *Segur*, was improper. The Examiner has not established a proper *prima facie* case of obviousness. The Examiner has also not met his burden to set forth particular findings "as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components in the manner claimed" In re Lee, 61 U.S.P.Q.2d 1430, 1433 (Fed. Cir. 2002).

Thornborough discloses an electromechanical meter having an interface operable to count the rotation of a mechanical wheel. The electromechanical meter is configured for communication only over a single communication medium, i.e., a telephone network. Although the device in *Thornborough* is able to transmit signals in accordance with BELL and CCITT standards, all transmission signals are transmitted via a TX Out line 58 connected to a telephone interface circuit 42. Therefore, the meter disclosed by *Thornborough* provides a singular, one way communication from the meter to a host. As such, the communication interface of *Thornborough* cannot communicate with a plurality of different types of communication devices, as required by the universal communications interface recited in Claim 12.

Schnell discloses a management communications bus that manages network devices in a network system, where “network devices” refer to computers, their interface cards and other devices such as repeaters, bridges, switches, routers, and the like (*Schnell*, Col. 1, lines 42-46). The point of the communication bus is to monitor and control the network devices, which may operate according to multiple protocols (Col. 5, lines 45-51). Each network device includes a slave device or a bus master device or both (Col. 2, lines 54-56.) The management interface bus includes several state signals for defining states of arbitration, for slave identification, for asserting an address and for asserting data corresponding to the address. The bus includes multiple ports to communicate with each of the computing devices, and uses a master/slave architecture to enable communication (Col. 6, lines 34-46). Furthermore, the master communications bus is not local to each of the computing devices, but is intended to permit communication of devices via a LAN, WAN or the like.

The present invention is clearly distinguishable from the device provided by *Schnell*. Unlike the system in *Schnell*, the present invention enables a single utility meter to communicate via a particular protocol (one protocol is used at any given time) with a single external recipient device. The universal communications interface of the present invention is local to utility meters and is associated with a single meter. Furthermore, unlike the bus in *Schnell*, the present invention does not include an interface having multiple slots to receive communications, in different protocols, from multiple computers and the like. In sum, the present invention is functionally and physically unlike the invention provided by *Schnell*.

The CAFC has stated that “the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for showing of the teaching or motivation to combine prior art references.” In re Dembiczak, 175 F.3d 994 at 999 (Fed. Cir. 1999). While the suggestion to combine may be found in explicit or implicit teachings within the references, from the ordinary knowledge of those skilled in the art, or from the nature of the problem to be solved, the “question is whether there is something in the prior art *as a whole* to suggest the desirability, and thus the obviousness, of making the combination. WMS Gaming, Inc. v. International Game Technology, 184 F.3d 1339 at 1355 (Fed. Cir. 1999). “The range of sources available, however, does not diminish the requirement for **actual evidence**. That is, the showing must be **clear and particular**.” In re Dembiczak, 175 F.3d 994 at 999 (Fed. Cir. 1999) (emphasis added). Furthermore, that in hindsight of applicants’ disclosure a skilled artisan arguably may be able to recognize, cull, modify, and combine certain

claim elements from disparate references is not evidence of a clear and particular motivation to combine those references. *See, e.g., In re Lee*, 61 U.S.P.Q.2d 1430, 1433-34 (Fed. Cir. 2002).

In the present case, there is not only no clear and particular teaching to combine the references, but there is no teaching whatsoever provided by the Examiner to support his position that *Thornborough* would have been combined with *Schnell* and *Segur* to render obvious the claimed invention. Throughout prosecution of the present invention the Examiner has pointed only to two statements of motivation to combine *Thornborough* with *Schnell* and *Segur*. Both statements, which are reproduced above and which tellingly begin with the word 'therefore', are entirely conclusory and provide not even a scintilla of actual evidence to support the combination.

In particular, there is no suggestion in *Thornborough* that anything other than a telephone communication should (or could) be used to transmit data, especially a communication device like *Schnell* that permits simultaneous communication with multiple devices requiring a variety of data formats and a variety of communication connections. Although *Schnell* discloses a management communication bus that permits networking devices such as computers to communicate, formatting a message into a format compatible with a connected communication device, as required by independent claim 12, is inconsistent with the purpose of *Schnell* because *Schnell* seeks to avoid formatting messages altogether, which is required by independent Claim 12 (*Schnell*, Col. 5, lines 45-49). Instead, *Schnell* simply allows devices using different protocols to communicate.

It is also clear that one of ordinary skill in the art would not have relied on *Schnell* to provide a universal communications interface to the device of *Thornborough* as asserted by the Examiner due to the extreme differences between *Thornborough* and *Schnell*. These differences result from the limitations of electromechanical utility meters and their dissimilarity from master/slave computer networks. *Thornborough* discloses an electromechanical meter that is purpose built for communicating meter information via a single communication line and protocol using very low power levels. *Thornborough* lacks user interfaces, drivers, multiple ports, inputs/outputs, digital input, and a conventional operating system. Although meters such as that described by *Thornborough* include a broadly defined "processor", the similarities end there. There is no reason why one would look towards a computer networking solution describing a multi-port bus to enable master slave communications between multiple networked

devices to enhance a dedicated electromechanical utility meter having a single port and sparse resources for any functions other than meter data collection.

And not only does the Examiner fail to provide a motivation to combine the references, the Examiner fails to appreciate the legal standard for supporting the §103 rejections. For instance, during the Examiner Interview, to support the combination of *Thornborough* and *Schnell*, the Examiner pointed out that both relate to “digital computer technology”, and that a computer, which is disclosed in *Schnell*, may be used to test or implement the present invention. (Examiner’s Interview Summary, Paper No. 15; Amendment Response of March 16, 2004, pages 6-7; RCE Final Office Action of May 5, 2004, pages 9-10). The Examiner is under the impression that the use of a computer to test or implement the present invention supports the combination, though it has no bearing on the motivation to combine the references. It is well settled that there must be some objective teaching or suggestion as to why the references would have been combined.

The devices disclosed by *Thornborough* and *Schnell* are, in fact, so different that they are non-analogous art inappropriate for combining to produce the outstanding §103 rejections. In *Pantec, Inc. v. Graphic Controls Corp.*, 776 F.2d 309, 227 USPQ 766 (Fed. Cir. 1985), the Federal Circuit stressed that “prior art may not be gathered with the claimed invention in mind”. Similarly, in *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992), the Court stated:

Patent examination is necessarily conducted by hindsight, with complete knowledge of the applicant’s invention, and the courts have recognized the subjective aspects of determining whether an inventor would reasonable be motivated to go to the filed in which the examiner found the reference, in order to solve the problem confronting the inventor ... [I]t is necessary to consider ‘the reality of the circumstances’, . . .-in other words, common sense-in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor ... The combination of elements from non-analogous sources, in a manner that reconstructs the applicant’s invention only with the benefit of hindsight, is insufficient to present a prima facie case of obviousness. 977 F.2d at 1447, 1445-46, 24 USPQ2d at 1446.

In *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986), the Federal Circuit adopted a two step test for determining whether particular references are within the appropriate scope of the art. First, it must be determined whether the reference is “within the field of the inventor’s

endeavor.” Second, if the reference is outside of that field, the reference must be “reasonably pertinent to the particular problem with which the inventor was involved.” Regarding the second step in the two part test, the Federal Circuit has stated that “A reference is a reasonably pertinent if, even though it may be in a different field from that of the inventor’s endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor’s attention in considering the problem.” *In re Clay*, 996 F. 2d 656, 659, 23 USPQ2d 1058, 1961 (Fed. Cir. 1992).

Here, the field of endeavor is utility meters having communication capabilities. As described above, Schnell is a management communication bus having multiple ports for communicating with multiple computing devices on a network having devices using a variety of protocols. This is, on its face, clearly is outside the present invention’s field of endeavor. Additionally, for the reasons recited above, Schnell would not have commended itself to an inventor’s attention to solve the problems addressed by the present invention. As recited above, there is no reason why one would look towards a computer networking solution describing a multi-port bus to enable master slave communications between multiple networked devices to enhance a dedicated electromechanical utility meter having a single port and sparse resources for any functions other than meter data collection

In addition to failure to provide motivation to combine *Thornborough* and *Schnell*, the Examiner’s deficiency in providing motivation to combine references permeates throughout the entire office action, including the dependent claims considered below. For instance, the Examiner also fails to provide adequate motivation to combine *Segur* with *Thornborough* and *Schnell*, providing nothing but conclusory statements that appear to be made to justify an ad-hoc reconstruction of the Applicant’s invention from the prior art. Additionally, because the Examiner admits that *Segur* does not disclose or teach a universal communications interface, and fails to provide any reason why *Segur* suggests that *Thornborough* and *Schnell* should or even could be combined, a proper *prima facie* case of obviousness for Claim 12 is not met. Applicant therefore respectfully requests the allowance of Claim 12 and each of the claims that depend from it.

The rejection of Claim 13 under 35 U.S.C. §103(a) as unpatentable over *Thornborough* in view of *Schnell*, and further in view of *Segur*, was also improper. The Examiner has not established a proper *prima facie* case of obviousness for the same reasons set forth in detail above with respect to independent Claim 12, upon which Claim 13 depends.

Therefore, a *prima facie* case of obviousness has not been met with respect to Claim 13 and the rejection of that claim is in error.

Issue 2: The Rejection of Claims 14, 17 and 18 under 35 U.S.C. §103 is in Error

The rejection of Claims 14, 17, and 18 under 35 U.S.C. §103(a) as unpatentable over *Thornborough* in view of *Schnell, Segur*, and further in view of *Turnio*, was improper. The Examiner has not established a proper *prima facie* case of obviousness for the same reasons set forth in detail above with respect to independent Claim 12. In particular, the failure of the Examiner to provide a proper motivation to combine *Thornborough* and *Schnell* also results in insufficient motivation to combine *Thornborough, Schnell, Segur* and *Turino*. *Turino* also fails to provide any teaching or motivation for combining *Thornborough, Schnell*, and *Segur*. Therefore, a *prima facie* case of obviousness has not been met with respect to Claims 14, 17, and 18 and the rejection of those claims is in error.

Issue 3: The Rejection of Claims 15, 16, and 19 under 35 U.S.C. §103 is in Error

The rejection of Claims 15, 16, and 19 under 35 U.S.C. §103(a) as unpatentable over *Thornborough* in view of *Schnell, Segur*, and further in view of *Davis*, was improper. The Examiner has not established a proper *prima facie* case of obviousness for the same reasons set forth in detail above with respect to independent Claim 12. In particular, the failure of the Examiner to provide a proper motivation to combine *Thornborough* and *Schnell* also results in insufficient motivation to combine *Thornborough, Schnell, Segur* and *Davis*. *Davis* also fails to provide any teaching or motivation for combining *Thornborough, Schnell*, and *Segur*. Therefore, a *prima facie* case of obviousness has not been met with respect to Claims 15, 16, and 19 and the rejection of those claims is in error.

Issue 4: The Rejection of Claims 20 and 21 under 35 U.S.C. §103 is in Error

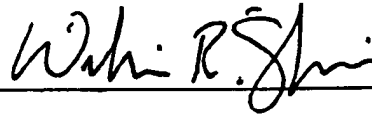
The rejection of Claims 20 and 21 under 35 U.S.C. §103(a) as unpatentable over *Thornborough* in view of *Schnell, Segur*, and further in view of *Curt*, was improper. The Examiner has not established a proper *prima facie* case of obviousness for the same reasons set

forth in detail above with respect to independent Claim 12. In particular, the failure of the Examiner to provide a proper motivation to combine *Thornborough* and *Schnell* also results in insufficient motivation to combine *Thornborough*, *Schnell*, *Segur* and *Curt*. *Curt* also fails to provide any teaching or motivation for combining *Thornborough*, *Schnell*, and *Segur*. Therefore, a *prima facie* case of obviousness has not been met with respect to Claims 20 and 21 and the rejection of those claims is in error.

IX. CONCLUSION

The Applicant respectfully requests that the Board overturn the rejection of the claims. Any questions may be directed to the undersigned at 404.853.8214.

Respectfully submitted this 8th day of December 2004.



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APPENDIX A – CLAIMS ON APPEAL

12. A system for monitoring and transmitting utility status via a universal communications interface, comprising:

- an input interface operative to receive a utility status signal from a utility meter;
- a processor functionally coupled to the input interface for receiving the utility status signal from the input interface and operative to generate a status message based on the utility status signal;

- a universal communications interface, local to the utility meter, functionally coupled to the processor and configurable for communicating with a plurality of different types of communication devices, each different type of communication device operative to communicate with a receiving device via one of a plurality of different communication mediums;

- a slot functionally coupled to the universal communications interface and configured to interchangeably connect one of the plurality of different types of communication devices;

- wherein the processor communicates with the universal communications interface to determine which one of the plurality of different types of communication devices is connected to the slot; and

- wherein the processor formats the status message into a format compatible with the connected communication device and transmits the formatted status message to the universal communications interface for transmission to the connected communications device.

13. The system of claim 12, wherein the plurality of different communication mediums are selected from the group consisting of radio frequency waves, telephone lines, cable lines, fiber optic lines, satellite links, and power lines.

14. The system of claim 12, wherein the utility status signal comprises an analog wave form; and

- wherein the input interface comprises an analog-to-digital converter operative to convert the analog wave form into a digital signal representing a utility status.

15. The system of claim 12, wherein the utility status signal is received from a connect/disconnect monitor of the utility meter.

16. The system of claim 12, wherein the utility status signal is received from a tamper detection monitor of the utility meter.

17. The system of claim 12, wherein the utility status signal is received from a voltage monitor of the utility meter.

18. The system of claim 12, wherein the utility status signal is received from a current monitor of the utility meter.

19. The system of claim 12, wherein the utility status signal is received from an outage notification monitor of the utility meter.

20. The system of claim 12, further comprising a memory storage functionally coupled to the processor for storing computer-executable instructions executed by the processor; and wherein said computer-executable instructions cause the processor to determine whether the utility status signal exceeds a threshold value and, if so, to generate the status message.

21. The system of claim 20, wherein the memory storage further stores data relating to signal formats compatible with each of the plurality of different types of communication devices.